

Amendments To The Claims

1. (Withdrawn) A method for storing credit information in a value store module in a value store electric power meter by communication between a host and each terminal through an electric power modem included in the value store electric power meter which is a terminal, comprising the steps of:

(a) the host generating first random data, sending the first random data to a terminal, generating a session key by a key generating algorithm using a terminal intrinsic secret key, generating a first signature value by a signature generation algorithm for a comparison during a terminal authentication, and the terminal receiving the first random data and generating the session key by the same method as the host;

(b) the terminal generating a second signature value by a signature generating algorithm and second random data and sending the second random data to the host;

(c) the host comparing the first and second signature values and authenticating the terminal, the host generating a third signature value and sending the third signature value to the terminal with information on an amount of money when the terminal is authenticated and the terminal receiving the third signature value and the information on the amount of money from the host, generating a fourth signature value, and authenticating the host by comparing the third and fourth signature values with each other; and

(d) the terminal increasing the value by decoding the information on the amount of money and sending the value obtained by encrypting a balance and a terminal ID using an encrypting algorithm to the host and the host receiving the encrypted value, decoding the encrypted value, comparing the stored terminal ID with the decoded terminal ID, authenticating

the terminal once again, and backing up the balance in a record file when the authentication is completed.

2. (Withdrawn) The method of claim 1, further comprising an electric power charge system conversion step including the sub-steps of:

(a1) the host generating first random data, sending the first random data to a terminal, generating a session key by a key generating algorithm using a terminal characteristic secret key, generating a first signature value by a signature generation algorithm for a comparison during a terminal authentication, and a terminal receiving the first random data and generating the session key by the same method as the host;

(b1) the terminal generating a second signature value by a signature generating algorithm and second random data and sending the second random data to the host;

(c1) the host comparing the first and second signature values and authenticating the terminal, the host generating a third signature value and sending the third signature value to the terminal with mode information when the terminal is authenticated and the terminal receiving the third signature value and the mode information from the host and generating a fourth signature value; and

(d1) the terminal authenticating the host by comparing the third and fourth signature values with each other, and the terminal converting a rate system, generating an encrypted value obtained by encrypting the mode information and the terminal ID using the encrypting algorithm and sending the encrypted value to the host and the host receiving the encrypted value, decoding the encrypted value, comparing the stored terminal ID with the decoded terminal ID,

authenticating the terminal once again, and backing up the balance in a record file when the authentication is completed.

3. (Withdrawn) The method of claim 2, further comprising a use information check command step including the sub-steps of:

(a2) the host generating first random data, sending the first random data to a terminal, generating a session key by a key generating algorithm using a terminal characteristic secret key, generating a first signature value by a signature generation algorithm for a comparison during a terminal authentication, and a terminal receiving the first random data and generating the session key by the same method as the host;

(b2) the terminal generating a second signature value by a signature generating algorithm and second random data and sending the second random data to the host;

(c2) the host comparing the first and second signature values and authenticating the terminal, the host generating a third signature value and sending the third signature value to the terminal with time information when the terminal is authenticated and the terminal receiving the third signature value and the time information from the host, generating a fourth signature value; and

(d2) the terminal authenticating the host by comparing the third and fourth signature values with each other, and the terminal sending the value obtained by encrypting a logfile of use details using the encrypting algorithm and sending the encrypted value to the host and the host receiving the encrypted value, decoding the encrypted value, comparing the stored terminal ID with the decoded terminal ID, authenticating the terminal once again, and backing up

information on use during days, weeks, and months and a timer in a record file when the authentication is completed.

4. (Currently Amended) A value store electric power meter including an electric power line input and output terminal, the meter measuring ~~the~~ an amount of used electric power, comprising:

an electric power consumption operating portion measuring the voltage and current of an electric power line and calculating used electric power;

an electric power modem that performs data communication between a host and the terminal through the electric power line;

a secure storing portion including a secure access module (SAM) having a CPU, an encryption and a store value module (SVM);

an on/off latch relay switch breaking the supply of electric power according to a balance result of the SVM; and

a token exchanger reducing a token from value information input from the SVM according to the amount of electric power consumed, the SVM requesting a new token via the electric power modem when an inner token is exhausted.

5. (Previously Amended) The value store electric power meter of claim 4, further comprising an IC card reading and recording portion to allow use with other meters by inserting an IC card into the electric power meter, receiving value from the host on-line, recording the received value on the inserted IC card, and reading the received value from the IC card.

6. (Previously Amended) The value store electric power meter of claim 5, wherein the IC card reading and recording portion is applied to water, gas, and heat meters employing an IC card method operated in an off-line state by recording added value in the IC card through the electric power modem, by which it is possible to store electric power value in the IC card by including a communication port comprised of eight terminals defined by the ISO 7816 Part 2 having Vcc, Clk, DIO, Reset, and Gnd for synchronously and asynchronously communicating with the IC card.

7. (Currently Amended) The value store electric power meter of claim 4, further comprising:

an AC/DC converter for supplying an operation voltage required by the electric power meter;

a power consumption sensor for sensing that the electric power is normally used when the output of a sensor is "0" and that terminals are bypassed and the electric power is surreptitiously used when the output of the sensor is "1"; and

a buzzer, for generating an audible alarm and guiding a user to perform value transfer and storage when a last token is received by requesting a new token from the SVM after a balance of the token exchanger is exhausted.

8. (Original) The value store electric power meter of claim 4, wherein the electric power consumption operating portion comprises:

a shunt resistor for measuring an amount of AC current;

a voltage divider for serially connecting two resistors and selecting from a voltage range given by the ratios of the two resistors in order to adjust the AC voltage of the electric power line within the range of the input voltage of a voltage meter;

an analog to digital converter for converting an AC current signal which flows through the shunt resistor into a digital signal of 16 or 20 bits; and

an analog to digital converter for converting an AC voltage into a digital signal of 16 bits, wherein the phase of the voltage is compared with the phase of the current and an angle by which the two phases are different from each other is calculated and output as a signal for applying differential rates.

9. (Previously Amended) The value store electric power meter of claim 4, further comprising an electric power consumption table which is an electric power fee mode table for differentially applying multiple step electric power use rates according to electric power supply and demand states on the basis of a real time clock comprised of year, month, hour, minute, and second.

10. (Original) The value store electric power meter of claim 4, comprising a nonvolatile memory storing a characteristic 3 byte ID number and recording an electric power use state during a certain period of hours, days, or months for remotely monitoring the surreptitious or abnormal use of electric power and performing an electronic sealing function.

11. (Currently Amended) The value store electric power meter of claim 4, comprising an LCD display for visually displaying a balance of the value, a transfer state of the value, a real time electric power consumption status, and an accumulative electric power use status states.

12. (Currently Amended) The value store electric power meter of claim 5, wherein the value store electric power meter further comprises:

means for performing audio communication with a person in charge of a host server or transmitting an audible message ~~to help a user with matters such as storage~~; and

a keypad for a user directly requesting the value to be stored.

13. (Previously Amended) The value store electric power meter of claim 4, wherein the electric power input and output terminal of the electric power meter comprises a cover and physical sealing for preventing physical tapping, which prevents the surreptitious and abnormal use of electric power.

14. (Original) The value store electric power meter of claim 4, further comprising an arrester circuit for absorbing lightning or a surge voltage on an electric power line of a supplier.

15. (Original) The value store electric power meter of claim 4, wherein the electric power line of a transformer for reducing 3.3KV to a generally used voltage of 110V/220V/240V further comprises a current transformer for measuring the total amount of current,

wherein the electric power meter is network connected to local service & surveillance units (LSs) having power modems for communicating with a maximum of 256 value store electric power meters on the electric power line and an area service & surveillance unit (AS) for managing a maximum of 256 LSs.

16. (Previously Amended) The value store electric power meter of claim 15, wherein the host further comprises a server for an electric power seller and an electric power reseller for issuing an IC card to a subscriber with the use of an IC card having a master key, automatically transferring value when the subscriber requests the value to be stored, monitoring and managing the legal use of a value of the subscriber, totaling and analyzing a detailed electric power status of the subscriber, thus re-determining a price in purchasing the electric power,

wherein each server connected to a plurality of ASs manages and monitors the value transfer and store electric power meter which can be connected to the ASs and LSs in a tree structure and stores value in the value store electric power meter.

17. (Original) The value store electric power meter of claim 15, further comprising a voltage divider, a voltage analog-to-digital converter, a current analog-to-digital converter, a latch relay, and a shunt resistor so that if at least two kinds of electric power sources selectively use other voltages or simultaneously use at least two kinds of voltages, it is possible to separately measure and operate the respective amounts of current.

18. (Previously Presented) The value store electric power meter of claim 12, wherein the means for performing audio communication comprises at least one of a telephone, a network, a personal automated teller machine, and a digital interphone.

19. (Previously Presented) The value store electric power meter of claim 4, wherein the secure storing portion is adapted to preventing fraudulent use of value information, hacking, cryptographical attack, and requiring an authorization process of the SAM in requesting a token from the SVM.